

Effectiveness of Multimedia Strategies in Learning Science

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Abstract

In the modern scientific, technical and technological age, conventional teaching methods are not enough to stimulate interest among students, Computers have become the most important integral part of our lives. The whole world is undergoing numerous transformations due to the rapid development and diffusion of information and communication technologies in all our life and multimedia strategies are becoming part of the educational systems. Multimedia strategies give teaching and learning and are also a perfect tool for the student community for making flexible learning. It provides an enjoyable environment for both the teachers and the students. It has a deal with new approaches like Multimedia, Online Learning, E-learning, Virtual learning, blended learning, and embedded learning, etc. Multimedia the most widely needed destination is a combination of many media with interactive facilities. Many schools, colleges, and universities are using multimedia applications in teaching and learning science. The effect of multimedia provides the multi-dimensional stimulus to listening pleasure to science. Multimedia strategies ensure flexible learning both teacher and learner, the pattern of multimedia strategies and its potential to improve all aspects of our social, college and university, and cultural life. Multimedia provides immediate comprehensive feedback to the students. It enhances the effectiveness of science learning and as well as it improves the quality of education. It develops students' activity as mastery learning; it stimulates the student's curiosity and encourages learning through various senses. The multimedia approach impacts the quality of zoology teaching and learning. Thus, in this paper, an attempt has been made to discuss the effectiveness of multimedia strategies in teaching and learning zoology in higher secondary schools.

Keywords: multimedia, learning, teaching strategies.

Introduction

In the modern scientific, technical and technological age, conventional teaching methods are not enough to stimulate interest among students, Computers have become the most important integral part of our lives. The whole world is undergoing numerous transformations due to the rapid development and diffusion of information and communication technologies in all our life.

In the modern era, multimedia strategies are becoming part of the educational systems. Multimedia strategies give teaching and learning and are also a perfect tool for the student community for making flexible learning and communication. It provides an enjoyable environment for both the teachers and the students. It has a deal with new approaches like Online Learning, E-learning, Virtual learning, blended learning, and embedded learning, etc. Multimedia the most widely needed destination is a combination of many media with interactive facilities. Many schools and universities are using multimedia applications in teaching and learning science. The effect of multimedia provides the multi-dimensional stimulus to listening pleasure of science word. Multimedia strategies ensure flexible learning both teacher and learner, the pattern of multimedia strategies and its potential to improve all aspects of our social, college and university, and cultural life. Multimedia provides immediate comprehensive feedback to the students. It enhances the effectiveness of science learning and as well as it improves the quality of education. It develops student's activity as mastery learning;

The long history of education has been dominated by the conventional method for teaching and learning. Generally, learning in schools and other educational institutions is extremely verbal. It is a recognized fact that a large part of the human brain tends to be visual. The brain readily perceives still or moving images and many learners prefer processing and interpreting raw sound rather than coping with the verbal description of the sound. Hence many learning tasks can therefore be more efficiently catered to by multimedia methods rather than the traditional method. If conventional verbal information presentation is replaced by multimedia strategies that appeal to the learner's multiple modalities and increase student curiosity.

The National Policy on Education (1986) has laid special emphasis on the use of computers, a part of "Educational Technology", for improving the quality of education. For the first time in the history of education, the NPE (1986) has observed, "Educational Technology will be employed in the spread of useful information, the training, and retraining of teachers to improve the quality of education". New technologies have made the walls of the learning space transparent, providing freedom for the learner to explore sources of information outside his institution, even outside his country. Hence, Thus, in this paper, an attempt has been made to discuss the effectiveness of multimedia strategies in teaching and learning zoology in schools and the investigator has chosen the right area for the present study

Educational Technology

Educational technology can be conceived as techniques and methods by which educational goals can be realized. The use of educational technology in acquiring knowledge, understanding, application, and skill has become an essential element in education. These multimedia elements in the educational processes have magical effects, intellectual strength depends on educational technology support. It is very important the use multimedia technology, to enhance the knowledge transaction in a new era of transformation in the modern world. It has provided an opportunity for the learner to use a maximum number of senses to get information.

Multimedia Strategies In Learning

Recent society is a technologically developing society. The learner in this stage fully engaged with technology. They are adaptive to the technology and they could easily access the new method of learning and gain knowledge. So now we can see the gap between the student and

teachers in terms of their being technology-enabled. Thus, there are different dynamic technology existing in our educational system not only our system around the world, educational systems are under increasing pressure to use the new information and communication technologies to teach students. In India use of ICTs skills in teaching and learning have become imperative for today's teacher. Learning has to be appreciated as a participatory process that takes place in a shared social context of the learner's immediate peers as well as the wider social community (NCERT, 2005). Much of our school learning is still individual-based (NCERT, 2005) and traditionally trusted tools of learning are inadequate for preparing children for a networked society.

Multimedia application in teaching and learning zoology. Sound is perhaps the most sensuous element in interactive multimedia it can provide the listening pleasure of word. Video in interactive multimedia combines visual and oral information. the multimedia technique ensures flexible learning, the pattern of interaction among learners, teachers, and resources. The nature of multimedia provides immediate comprehensive feedback to the students. It enhances zoology learning and as well as improves the quality of education. It develops science activity as mastery learning; it stimulates the student's curiosity and encourages learning through various senses. The interactive multimedia approach improves the quality of zoology teaching and learning.

Review of Related Literature

K. Ananda Krishnan and Dr.G. Kalaiyarasan (2018) on Effectiveness of multimedia courseware in learning chemistry at the higher secondary level with reference to high achievers. Major Objective To find out the effectiveness of the Multimedia courseware approach in learning chemistry at a higher secondary level with reference to high achievers. The following are the findings of the study. 1. Multimedia courseware approach in learning chemistry at the higher secondary level is more effective when compared with the traditional method of teaching to high achievers due to its effectiveness of animation, sound, color, and text in learning. 2. There is no significant difference between pretest and post-test mean achievement scores of the control group high achievers. 3. There is a significant difference between pre and post-test mean achievement scores of the experimental group high achievers. 4. There is no significant difference between control and experimental group high achievers in pre-tests mean achievement scores. 5. There is a significant difference between control and experimental group high achievers in posttest achievement scores.

Navdeepkaur (2014) tried to find out the effectiveness of the multimedia approach in teaching arts at the secondary stage in India. The study revealed that (i) the performance of students in mean post-test 101 scores of the experimental group is higher than the mean post-test scores of the control group, (ii) the boys and girls slightly differ in their performance when taught with multimedia, (iii) the students of the experimental group were looking well and more motivated and ready to learn each day of the experimental duration of CAI treatments than students of the control group. On the whole, the study shows that the multimedia approach plays an important role in improving the achievements of students.

Kumar, Sushil (2013) did a study on the Effect of the Multimedia approach and traditional method on retention and academic achievement of science students at secondary school level a comparative study. Ph.D. Thesis, department of education, Kurukshetra University, Haryana in this study the researcher has done experimented among three groups of 9th class students each consisting of 30 students. One of the groups has been taught through the traditional method of teaching and the other two groups are taught through multimedia technology. The main objective of this research is to access the difference between the multimedia approach and traditional methods on academic achievements. The analysis of the study concludes that learning from the multimedia package is more effective than the traditional method of teaching as the results are very significant.

Walker, James et.al. (2000) developed multimedia-based resources to study human anatomy. These resources include the integration of video and audio with animations, text, and graphics. The result revealed that the greatest impact of these resources on learning will be to strengthen the student's basic science knowledge and to provide them access to materials that integrate structural and functional components of specific body systems as well as to use their time efficiently, foster active and independent learning while at the same time maintaining their interest and enthusiasm.

Sampling Method and Research Design

A post-test multiple choice question based on zoology was used to find out the result on how far the multimedia module has worked out in learning. The improvement proves the effect of multimedia techniques. This sampling has proved that multimedia content modules can be used effectively in the learning of zoology. A pretest was conducted and the multiple-choice questions were planned and sent to the committee for questionnaire confirmation. After completing the pretest, the students introduced the multimedia module. The multimedia modules were played if it is needed to learn. Some students would grasp at the first stage but the majority of students need it to be repeated. A teacher couldn't repeat content in the teaching, so multimedia strategies do it

The difference between pretest and posttest scores indicates that the multimedia module on the Effectiveness of multimedia strategies in learning zoology in schools has contributed immensely to the development of teaching and learning zoology in Indian classrooms.

Major Objectives

- To find out there is no significant difference between an experimental group and the control group in their pretest with respect to their learning of zoology
- To find out there is no significant difference between the experimental group and the control group in their post-test mean scores with respect to their learning of zoology.
- To find out there is no significant difference between pretest and posttest mean scores of the control group with respect to the learning of zoology.
- To find out there is no significant difference between pretest and posttest mean scores of the experimental group with respect to learning of zoology.

Methodology

Stage 1: Grouping the sample

At this stage, the students tested intelligence. On this basis, the students were divided into two groups such as control group and the experimental group. The scores in the test proved the homogeneity of the sample groups.

Stage 2: Conducting pre-test

In this stage, both the control and experimental group underwent a pre-test and find out the previous knowledge of the groups.

Stage 3: Conducting the treatment

In this stage, the experimental treatment i.e. teaching with multimedia strategy was given to the experimental group and the conventional teaching method was given to the control group.

Stage 4: Conducting post-test

In this stage, both the experimental group and control group underwent post-test and retention post-test

Stage 5: The result of the treatment

The effect of the multimedia strategies in learning on achievement was found out by the post-test scores.

Sample

A sample of 70 students had been proposed to be drawn. From these samples, 35 male students in the experimental group and 35 female students in the control group from a government school in the Pudukkottai district have been taken.

Tool used

1. Multimedia module developed and validated by the researcher.
2. Achievement test developed and validated by the researcher.

Statistical techniques used

Investigator had taken the score obtained by the 70 samples and used the following statistical techniques for the data analysis.

Mean, Standard Deviation, and ‘t-test and Pearson product-moment Correlation

Analysis of the study

Hypothesis 1: There is no significant difference between the experimental group and the control group in their pretest with respect to their learning of zoology.

Table:1
DIFFERENCE BETWEEN THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN THEIR PRETEST WITH RESPECT TO THEIR LEARNING OF ZOOLOGY

S.No	Pretest	N	Mean	SD	“t” test	Level of significance
1.	Experimental group	35	20.46	4.00	0.9863	Not Significant

2.	Control group	35	19.51	4.00		
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The mean of the pre-test scores of the experimental group is found to be 20.46 with an SD of 4.00. The mean of the pre-test scores of the control group is found to be 19.51 with an SD of 4.00. The calculated t' value (0.9863) is less than the table value at 0.01% level of significance. Therefore, the hypothesis is accepted. It is concluded that there is no significant difference between the experimental and control group of pretest with respect to zoology.

Hypothesis 2 : There is no significant difference between the experimental group and the control group in their post-test mean scores with respect to their learning of zoology.

Table:2

DIFFERENCE BETWEEN THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN THEIR POST-TEST MEAN SCORES WITH RESPECT TO THEIR LEARNING OF ZOOLOGY

S.No	Post-test	N	Mean	S. D	't'-value	Level of significance
1	Experimental group	35	38.03	3.22	7.46	Significant
2	Control group	35	30.03	5.46		

The mean of the post-test scores of the experimental group is found to be 38.03 with an SD of 3.22. The mean of the post-test scores of the control group is found to be 30.03 with an SD of 5.48. Thus, the result reveals that the mean score of the experimental group (38.03) is greater than the control group (30.03) with respect to the learning of zoology. The calculated t' value (07.46) is higher than the table value (2.72) with corresponding to the 0.01 level of significance. Therefore, null hypothesis 03 is rejected. It is concluded that there is a significant difference between the experimental and control group of the posttest with respect to learning of zoology.

Hypothesis 3: There is no significant difference between pretest and posttest mean scores of the control group with respect to the learning of zoology.

Table:3

DIFFERENCE BETWEEN PRETEST AND POSTTEST MEAN SCORES OF THE CONTROL GROUP WITH RESPECT TO THE LEARNING OF ZOOLOGY

S.No	Control group	N	Mean	S. D	't'-value	Level of significance
1.	Pre -test	35	19.51	4.00	9.195	Significant
2.	Post -test	35	30.03	5.46		

The mean of the pre-test scores of the control group is found to be 19.51 with an SD of 4.00. The mean of the post-test scores of the control group is found to be 30.03 with an SD of 5.46. Thus, the result reveals that the mean score of the posttest (30.03) is greater than the pretest (19.51) with respect to the learning of zoology. The calculated t' value (9.195) is less than the table value (2.72) corresponding to the 0.01 level of significance. Hence the null

hypothesis is rejected. Hence it is concluded that there is a significant difference between pre-test and post-test mean scores of the control group with respect to the learning of zoology.

Hypothesis 4: There is no significant difference between the pretest and posttest mean scores of the experimental group with respect to learning of zoology.

Table.4

DIFFERENCE BETWEEN THE PRETEST AND POSTTEST MEAN SCORES OF THE EXPERIMENTAL GROUP WITH RESPECT TO LEARNING OF ZOOLOGY

S.No	Experimental Group	N	Mean	S. D	't'-value	Level of significance
1.	Pretest	35	20.46	4.00	20.23	Significant
2.	Post test	35	38.03	3.22		

The mean of the pre-test scores of the experimental group is found to be 20.45 with an SD of 4.00. The mean of the post-test scores of the experimental group is found to be 38.03 with an SD of 3.22. Thus, the result reveals that the mean score of the posttest (38.03) is greater than the pre-test (20.45) with respect to the learning of zoology. The calculated 't' value (20.23) is less than the table value (2.72) with corresponding to the 0.01 level of significance. Hence the null hypothesis is rejected. Hence it is concluded that there is a significant difference in pre-test and post-test of the experimental group with respect to the learning of zoology.

Recommendation

The finding of the study exposed clearly that learning with multimedia is effective and promotes achievement in XI standard students in zoology and which is helping to keep the strength of retention for a longer period.it enhances the attention of the students in learning.it would help the learners to understand the concept clearly and easily. The investigator recommended the following:

- a. Every teacher should be sound skills to prepare the multimedia content and handle the classes only for multimedia strategies.
- b. The teacher should provide student participation in the multimedia classroom.
- c. Most learning management systems like Moodle, Edmodo, and blackboard include a range of functions to create active learning activities such as think pair and share, and quizzes, etc.,
- d. Zoology teachers would utilize available learning resources to enhance positive attitude towards learning and performance in zoology

Conclusion

Multimedia strategies are an environment in which the lessons and digital resources are developed on CD, DVDs, or other web servers. Multimedia can be utilized anywhere, anywhere in the world. Multimedia learning ensures flexible learning and user friendly because the learners can learn on own speed. This is very much useful to the average, below average learners to use it, again and again, to develop their learning skills with own pace. If multimedia strategies have been effective future beyond much of the expectation and experimentation that reflects much of the existing module. Therefore, Educators should include multimedia technology in their

classrooms to create better learning opportunities for their students. This would be enriching the conceptual clarity of the subject at any time and anywhere. Based on the results and findings of the study it is concluded that the developed multimedia strategies for learning zoology to students are a highly effective tool for learning zoology.

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